

CLAIMS:

I Claim:

1. A bone grafter attachment unit for removing and collecting bone fragments from a bone, using a surgical rotational handpiece, the bone grafter attachment unit comprising:

a rotatable drill having a shank engageable with the handpiece, and a cutting member; and

a container for receiving bone fragments and having an opening through which said cutting member passes, said container being held against the surface of the bone at a down site and being held against rotation during rotation of said drill, and said drill being movable relative to said container,

whereby when said drill is rotated by the handpiece and said cutting member engages bone, bone fragments are created and pass over said cutting member and through said opening into said container.

2. The bone grafter attachment unit of claim 1, wherein said cutting member comprises a drill bit having flutes through which said bone fragments pass into said container.

3. The bone grafter attachment of claim 1, wherein said container comprises an inner sleeve unit having at least one

peripheral opening and an outer sleeve surrounding at least as part of said inner sleeve unit, said outer sleeve being selectively fixed to said inner sleeve unit.

4. The bone grafter attachment unit of claim 3, wherein said outer sleeve is transparent.

5. The bone grafter attachment unit of claim 3, further comprising a fixing device coupled to at least one of said outer sleeve and inner sleeve unit for selectively fixing said outer sleeve to said inner sleeve unit.

6. The bone grafter attachment unit of claim 5, wherein said fixing device comprises a pin fixed to said inner sleeve unit, said outer sleeve including a slot receivable of said pin whereby when said pin is received in said slot, said outer sleeve is fixed to said inner sleeve unit and by sliding said outer sleeve until said pin is removed from said slot, said outer sleeve is movable relative to said inner sleeve unit and said at least one peripheral opening is exposed.

7. The bone grafter attachment unit of claim 6, wherein said slot is arranged in an axial direction of said container.

8. The bone grafter attachment unit of claim 3, wherein said inner sleeve unit comprises an inner sleeve portion defining said at least one peripheral opening, and an annular bottom part coupled to said inner sleeve portion, said annular bottom part defining said opening through which said cutting member passes.

9. The bone grafter attachment unit of claim 8, wherein said annular bottom part includes a circumferential lip, said inner sleeve portion and said outer sleeve engaging said circumferential lip.

10. The bone grafter attachment unit of claim 1, further comprising a pressing unit for urging said container to cover said cutting member

11. The bone grafter attachment unit of claim 10, wherein said pressing unit comprises:

a spring holder arranged around and movable relative to said shank;

a spring member arranged between said spring holder and said container; and

a locking spring ring fixed to said shank, said spring holder being urged by said spring member against said locking spring ring.

12. The bone grafter attachment unit of claim 10, wherein said spring member comprises a compression coil spring.

13. The bone grafter attachment unit of claim 11, wherein said spring holder has a planar annular portion defining an opening through which said shank passes and a cylindrical side portions extending outward of said spring member.

14. The bone grafter attachment unit of claim 1, further comprising a rotation preventing device for preventing rotation of said container upon rotation of said drill.

15. The bone grafter attachment unit of claim 14, wherein said rotation preventing device comprises an arm attached to said container and adapted to engage the handpiece.

16. The bone grafter attachment unit of claim 15, wherein said container comprises:

an inner sleeve unit having at least one opening on its periphery;

an outer sleeve surrounding at least a part of said inner sleeve unit, said arm being attached to said outer sleeve such that rotation of said outer sleeve upon rotation of said drill is prevented; and

a pin fixed to said inner sleeve unit, said outer sleeve including a slot arranged in an axial direction of said container and receivable of said pin whereby when said pin is received in said slot, said outer sleeve is fixed to said inner sleeve unit and rotation of said inner sleeve unit upon rotation of said drill is prevented, said outer sleeve being movable relative to said inner sleeve unit to expose said at least one peripheral opening by sliding said outer sleeve until said pin is removed from said slot.

17. The bone grafter attachment unit of claim 1, wherein said cutting member includes at least one flute for enabling bone fragments to pass into said container.

18. The bone grafter attachment unit of claim 1, wherein said cutting member comprises a milling cutter having cutting blades on a bottom planar surface and on a side cylindrical surface thereof.

19. The bone grafter attachment unit of claim 18, wherein said milling cutter has spiral flutes on a side surface thereof, said flutes being arranged at an angle from about 30° to about 75° relative to said bottom planar surface.

20. The bone grafter attachment unit of claim 1, wherein said container comprises a cylindrical sleeve, and an annular bottom part removably coupled to said sleeve and defining said opening in which said cutting member is arranged.

21. The bone grafter attachment unit of claim 20, wherein said container further comprises:

an annular top part coupled to or integral with said sleeve;  
and

an upper guide ring arranged in an opening defined by said top part, said upper guide ring defining an opening through which a portion of said drill passes.

22. The bone grafter attachment unit of claim 20, wherein said sleeve and said annular bottom part include cooperating threads.

23. The bone grafter attachment unit of claim 20, further comprising a rotation preventing device for preventing rotation of said container upon rotation of said drill, said rotation preventing device comprising:

a projecting arm extending outward from said sleeve and including a groove; and

an elastic ring adapted to be extended around the handpiece

arm and in said groove.

24. The bone grafter attachment unit of claim 23, further comprising an annular ring fixed to said drill for limiting axial movement of said container upon contraction of said elastic ring.

25. The bone grafter attachment unit of claim 1, further comprising a handle adapted to be operatively held by an operator, said container being removably coupled to said handle.

26. The bone grafter attachment unit of claim 25, wherein said container and said handle include cooperating threads which enable removably coupling of said container to said handle.

27. The bone grafter attachment unit of claim 25, wherein said container includes:

an upper drill guide fitted in an opening in an upper side of said container; and

a lower drill guide fitted in an opening in a lower side of said container, said upper and lower drill guide each including an opening through which said drill passes.

28. The bone grafter attachment unit of claim 25, further comprising an annular ring fixed to said drill for limiting

movement of said drill into the bone.

29. The bone grafter attachment unit of claim 1, wherein the handpiece has a reverse rotational motion, and wherein by operating the drill in reverse, bone fragments in said container are caused to pass out of said container.

30. A method of removing and collecting bone fragments from a donor bone site, comprising:

providing a rotatable drill having a shank engageable with a surgical rotational handpiece, said rotatable drill having a cutting member portion;

providing a container having an opening through which said cutting member passes, and having an enclosure for receiving bone fragments;

urging said container against a surface of a bone at the donor bone site;

operating said handpiece so as to rotate said drill and pressing said drill in a direction to cause the drill to drill into bone at the donor bone site;

holding said container against rotation relative to said drill during rotation of said drill; and

passing bone fragments created by operation of said drill at the donor bone site over said cutting member and through said



opening into said container.

31. The method according to claim 30, wherein said cutting member comprises a drill bit having flutes, and wherein said bone fragments pass into said container through said flutes of said drill bit.

32. The method of claim 30, wherein said step of urging said container against a surface of the bone comprises applying an urging force to said container by a spring member during pressing of said cutting member to drill into said bone.